BIOPHYSICAL JOURNAL

published monthly for the Biophysical Society
by The Rockefeller University Press
edited by the Biophysical Society in cooperation
with the Division of Biological Physics
of The American Physical Society

Editorial Board

JOHN GERGELY, *Editor*
J. W. LONGWORTH, *Associate Editor*
ROBERT M. PEARLSTEIN, *Associate Editor*
OLAF ANDERSEN
JAMES B. BASSINGTHWAIGHTE
TED BEGENISICH
FRANCISCO BEZANILLA
FLOYD J. BRINLEY, JR.
CHARLES BROKAW
BARRY BUNOW
GERALD EHRENSTEIN
DAVID EISENBERG
FREDERIC S. FAY
JENNY P. GLUSKER
RAJ K. GUPTA
SANDY HELMAN
ROBERT M. HOCHMUTH
PATRICIA JOST
JAMES A. LAKE
RAMON R. LATORRE
ROBERT M. MACNAB
ALEXANDER MAURO
STUART MCLAUGHLIN
WILLIAM PARSON
ANTONIO SCARPA
MARK SCHOENBERG
JANE K. SETLOW

VOLUME 37 NEW YORK 1982

Copyright © 1982 by Biophysical Society

CONTENTS

January 1982 *volume* 37 *number* 1

EDITOR'S FOREWORD. *V. Adrian Parsegian*

Poster Summaries

NATIVE MEMBRANES

3 EFFECTS OF DIVALENT METAL IONS AND CHELATORS ON THE STRUCTURE OF OUTER MITOCHONDRIAL MEMBRANES FROM *NEUROSPORA CRASSA*. *Carmen A. Mannella and Joachim Frank*

4 PHOTOACOUSTIC CALORIMETRY OF PURPLE MEMBRANE. *Jane LeGrange, David Cahen, and S. Roy Caplan*

6 THE RELATIVE LOCATIONS OF INTRAMEMBRANE FLUORESCENT PROBES AND OF THE CYTOSTOL HEMOGLOBIN IN ERYTHROCYTES, STUDIED BY TRANSVERSE RESONANCE ENERGY TRANSFER. *J. Eisinger and J. Flores*

8 A COMPARISON OF LIPID LATERAL DIFFUSION IN THE CELLULAR PLASMA MEMBRANE AND IN MULTIBILAYERS COMPOSED OF PLASMA MEMBRANE LIPIDS. *K. Jacobson, Y. Hou, Z. Derzko, J. Wojcieszyn, and D. Organisciak*

10 INVOLVEMENT OF PHOSPHOLIPIDS IN THE COUPLING OF ADENOSINE AND DOPAMINE RECEPTORS TO RAT STRIATAL ADENYLATE CYCLASE. *Madhu B. Anand-Srivastava and Roger A. Johnson*

12 CRITICAL LIPID-PROTEIN STOICHIOMETRIES IN ERYTHROCYTE MEMBRANE REACTIONS GOVERNING PROTECTION AND MORPHOLOGY SWITCHING. *Rex Lovrien and Richard A. Anderson*

14 THE MOLECULAR BASIS OF ALCOHOL TOLERANCE AND DRUG CROSS-TOLERANCE IN CHRONIC ALCOHOLISM. *Hagai Rottenberg, Alan Waring, and Emanuel Rubin*

16 MEMBRANE FLUIDITY CHANGES ACCOMPANY ACTIVATION OF SEA URCHIN EGGS. *Carl Scandella, Judith Campisi, Jeff Elhai, and Mary Selak*

18 "AMBIQUITOUS" BEHAVIOR OF BRAIN HEXOKINASE. RAPID AND REVERSIBLE INTERACTION OF HEXOKINASE WITH THE OUTER MITOCHONDRIAL MEMBRANE. *J. E. Wilson*

19 THE MEMBRANE ENZYME COMPLEX REQUIRED FOR L-PROLINE TRANSPORT AND UTILIZATION IN *ESCHERICHIA COLI* K12. *Janet M. Wood*

21 MEMBRANE-IMPERMEANT, CLEAVABLE CROSS-LINKERS. NEW PROBES OF NEAREST-NEIGHBOR RELATIONS AT ONE FACE OF A MEMBRANE. *James V. Staros*

23 SUPPRESSION OF CYTOTOXICITY OF DIPTHERIA TOXIN BY MONOCLONAL ANTIBODIES AGAINST PHOSPHATIDYLINOSITOL PHOSPHATE. *Richard L. Friedman, Fritz Roerdink, Barbara H. Iglewski, and Carl R. Alving*

25 STRUCTURAL DOMAINS IN VESICULAR STOMATITIS VIRUS MEMBRANE AS STUDIED BY DIFFERENTIAL SCANNING CALORIMETRY. *Christie G. Brouillette, Richard W. Compans, Jere P. Segrest, and John F. Brandts*

26 THE M PROTEIN OF VESICULAR STOMATITIS VIRUS. VARIABILITY IN LIPID-PROTEIN INTERACTION COMPATIBLE WITH FUNCTION. *John Lenard, Denise A. Mancarella, Tazewell Wilson, Jeffrey A. Reidler, Paul M. Keller, and Elliot L. Elson*

28 INSERTION OF BACTERIOPHAGE M13 COAT PROTEIN INTO MEMBRANES. *Marcia Manning, Susan Chrysogelos, and Jack Griffith*

30 LIPID-PROTEIN INTERACTIONS IN SARCOPLASMIC RETICULUM. A DISRUPTED SECONDARY LIPID LAYER SURROUNDS THE Ca^{++}-ATPASE. *Barry R. Lentz, Bryant M. Moore, Celia Kirkman, and Gerhard Meissner*

32 THE INTERACTION OF MEMBRANE-ACTIVE COMPOUNDS WITH THE SURFACES OF SCHISTOSOMULA AND ADULT *SCHISTOSOMA MANSONI*. *J. R. Kusel, L. Stones, and W. Harnett*

34 ^{31}P NMR INVESTIGATION OF RHODOPSIN-PHOSPHOLIPID INTERACTIONS IN BOVINE ROD OUTER SEGMENT DISK MEMBRANES. *Arlene D. Albert, Philip L. Yeagle, and Burton L. Litman*

36 MEMBRANE LIPID FLUIDITY AND PHYSICAL STATE AND THE ACTIVITY OF THE Na^+, Mg^{++}-ATPASE OF *ACHOLEPLASMA LAIDLAWII* B. *John R. Silvius and Ronald N. McElhaney*

MODEL SYSTEMS I

41 ROLE OF SPECIFIC MEMBRANE LIPIDS IN MODULATING THE ACTIVITY OF ADENYLATE CYCLASE. *G. Matthew Hebdon, Harry LeVine III, Naji E. Sahyoun, Claus J. Schmitges, and Pedro Cuatrecasas*

42 REGULATION OF MICROSOMAL HMG-COA REDUCTASE BY ENZYME-LIPID INTERACTIONS. *Vana L. Smith, Lynn G. Brent, M. Suzanne Shabbot, and Richard E. Thompson*

44 INCORPORATION OF BOVINE ENTEROKINASE INTO SYNTHETIC PHOSPHOLIPID VESICLES. *Peter Fonseca and Albert Light*

46 THE LIPID DEPENDENCE OF GLUCOSE-6-PHOSPHATE PHOSPHOHYDROLASE. *Richard C. Crain and Donald B. Zilversmit*

47 LIPID-PROTEIN INTERACTIONS IN THE RAT BRAIN MITOCHONDRIAL MULTIPLE MONOAMINE OXIDASE. *Rosa H. Huang*

49 ^{31}P NMR STUDIES OF ORIENTED MULTILAYERS FORMED FROM ISOLATED SARCOPLASMIC RETICULUM AND RECONSTITUTED SARCOPLASMIC RETICULUM. EVIDENCE THAT "BOUNDARY-LAYER" PHOSPHOLIPID IS NOT IMMOBILIZED. *A. C. McLaughlin, L. Herbette, J. K. Blaisie, C. T. Wang, L. Hymel, and S. Fleischer*

51 NMR STUDIES OF THE MOTIONAL CHARACTERISTICS OF THE PHOSPHOLIPID IN RECONSTITUTED SARCOPLASMIC RETICULUM MEMBRANE VESICLES. *Sidney Fleischer, Lin Hymel, Lukas Tamm, and Joachim Seelig*

53 EPR STUDIES OF THE MOTIONAL CHARACTERISTICS OF THE PHOSPHOLIPID IN FUNCTIONAL RECONSTITUTED SARCOPLASMIC RETICULUM MEMBRANE VESICLES. *J. Oliver McIntyre, Philip Samson, Stephen C. Brenner, Lauraine Dalton, Larry Dalton, and Sidney Fleischer*

56 Ca^{++}-ATPASE–DETERGENT INTERACTIONS. A GOOD MODEL FOR PROTEIN-LIPID INTERACTIONS. *William L. Dean*

57 INTERDIGITATION OF FATTY ACID CHAINS OF DIPALMITOYLPHOSPHATIDYLGLYCEROL DUE TO INTERCALATION OF MYELIN BASIC PROTEIN. *Joan M. Boggs and Mario A. Moscarello*

59 INTERACTION OF BASIC PROTEIN AND PERIPHERAL NERVE P2 PROTEIN WITH LIPIDS. *Walter J. Moore*

61 INTERACTION OF BASIC PROTEINS WITH CHARGED PHOSPHOLIPIDS FOLLOWED BY FLUORESCENCE, DSC, AND RAMAN SPECTROSCOPY. *E. Bernard, J. F. Faucon, J. Dufourcq, L. Duchesneau, and M. Pézolet*

63 THE INTERACTION OF CYTOCHROME b_5 WITH LIPID VESICLES. *Peter W. Holloway, Tom C. Markello, and Thomas L. Leto*

65 THE SPECIFICITY AND AFFINITY OF PHOSPHOLIPIDS FOR CYTOCHROME *c* OXIDASE. *Neal C. Robinson*

66 CYTOCHROME *c* OXIDASE-LIPID INTERFACE FROM THE PROTEIN SIDE. *G. Georgevich and R. A. Capaldi*

68 PROTEIN-LIPID INTERACTIONS WITHIN PURIFIED AND RECONSTITUTED CYTOCHROME *c* REDUCTASE AND OXIDASE. *Alexandre T. Quintanilha, David D. Thomas, and Maurice Swanson*

69 FATTY ACID PERTURBATION OF A MEMBRANE PROTEIN-LIPID INTERACTION. A TERBIUM (Tb^{+++}) STUDY. *W. J. Pjura, A. M. Kleinfield, R. D. Klausner, and M. J. Karnovsky*

71 INTERACTION OF PHOSPHATIDYLCHOLINE WITH β-LACTOGLOBULIN. *Eleanor M. Brown, Joseph Sampugna, Philip E. Pfeffer, and Robert J. Carroll*

73 INTERACTION OF INTEGRAL MEMBRANE PROTEINS WITH MULTIVALENT LIGANDS. *Frank R. Landsberger and Larry D. Altsteil*

74 PRESSURE EFFECTS ON LIPID-PROTEIN INTERACTIONS. *K. Heremans, H. De Smedt, and F. Wuytack*

MODEL SYSTEMS II

79 RED CELL MEMBRANE PROTEINS IN MONOLAYER AND MULTILAYER STRUCTURES. *Martin Blank*

80 NMR STUDIES OF THE INTERACTION OF LIPIDS WITH GLYCOPHORIN *a* IN SMALL UNILAMELLAR VESICLES. *James H. Prestegard and Richard Li-da Ong*

81 WHAT IS A SUCCESSFUL RECONSTITUTION OF A MEMBRANE GLYCOPROTEIN THAT LACKS AN ENZYMATIC ACTIVITY? *B. J. Gaffney and R. K. Scheule*

83 RAMAN AND FOURIER TRANSFORM INFRARED SPECTROSCOPIC STUDIES OF THE INTERACTION BETWEEN GLYCOPHORIN AND DIMYRISTOYLPHOSPHATIDYLCHOLINE. *R. Mendelsohn, R. A. Dluhy, D. G. Cameron, and H. H. Mantsch*

85 LIPID DYNAMICS DURING THE SPONTANEOUS REACTIVIATION OF A MEMBRANOUS SIALYLTRANSFERASE COMPLEX IN *ESCHERICHIA COLI* K-235. *Frederic A. Troy, Dorothy A. Adams, and Christopher Whitfield*

87 *ESCHERICHIA COLI* PYRUVATE OXIDASE. INTERACTION OF A PERIPHERAL MEMBRANE PROTEIN WITH LIPIDS. *Mike Mather, Robert Blake, John Koland, Herbert Schrock, Patricia Russell, Thomas O'Brien, Lowell P. Hager, Robert B. Gennis, and Marion O'Leary*

88 STUDIES ON THE ENERGY-TRANSDUCING ATPASE COMPLEX OF BIOLOGICAL MEMBRANES. CROSS-HYBRID RECONSTITUTION OF F_1 AND F_0 OF *ESCHERICHIA COLI* PLASMA MEMBRANE AND RAT LIVER MITOCHONDRIA. *S. S. Liu, F. H. Gao, H. L. Tsai, and Y. Z. Ding*

91 ASSOCIATION OF THE BOVINE CARDIAC MITOCHONDRIAL ATPASE WITH PHOSPHOLIPIDS. RECONSTITUTION AND PHOSPHOLIPID EXCHANGE STUDIES. *Rhoderick E. Brown and Carol C. Cunningham*

93 RHODOPSIN-PHOSPHOLIPID RECONSTITUTION FROM OCTYL GLUCOSIDE-SOLUBILIZED SAMPLES. *Marilyn L. Jackson and Burton J. Litman*

94 SPIN-LABEL STUDIES OF RHODOPSIN-LIPID INTERACTIONS. *Anthony Watts, Igor D. Volotovski, Robert Pates, and Derek Marsh*

96 ATP-DEPENDENT PROTON PUMPING CATALYZED BY THE PURIFIED YEAST PLASMA MEMBRANE ATPASE RECONSTITUTED INTO PHOSPHOLIPID VESICLES. *Jean-Pierre Dufour and Tian Yow Tsong*

98 RECONSTITUTION AND MODULATION OF AN α-MANNOSIDASE BY PHOSPHOLIPIDS. *W. Thomas Forsee, John W. Jensen, and John S. Schutzbach*

99 RECONSTITUTION OF THE MEMBRANE-BOUND FORM OF DOPAMINE-β-HYDROXYLASE. *Patrick Fleming and Ashima Saxena*

101 RECONSTITUTION OF D-LACTATE DEHYDROGENASE-DEFICIENT MEMBRANE VESICLES USING FLUORINE-LABELED COMPONENTS. AN APPROACH TO INVESTIGATING PROTEIN-LIPID INTERACTIONS IN BIOLOGICAL MEMBRANES. *E. A. Pratt, Judith A. Jones, Patricia F. Cottam, Susan R. Dowd, and Chien Ho*

103 LIPID-PROTEIN INTERACTIONS IN MEMBRANES CONTAINING THE ACETYLCHOLINE RECEPTOR. *M. G. McNamee, J. F. Ellena, and A. W. Dalziel*

105 USING SHORT-CHAIN LECITHINS TO STUDY THE SURFACE BEHAVIOR OF LIPOLYTIC ENZYMES. *R. A. Burns, Jr., and M. F. Roberts*

106 ASSEMBLY OF THE PROTHROMBINASE COMPLEX. *K. G. Mann, M. E. Nesheim, P. B. Tracy, L. S. Hibbard, and J. W. Bloom*

108 THE ASSOCIATION OF CARDIOLIPIN WITH DETERGENT-SOLUBILIZED CYTOCHROME *c* OXIDASE. *Sung H. Gwak and Gary L. Powell*

109 A SOLUBILIZED AND ACTIVE ADENYLATE CYCLASE LIPIDATED WITH NATIVE ANNULAR LIPIDS. *A. W. Scotto and N. I. Swislocki*

110 AN INTEGRATED VIEW OF THE DYNAMICS OF LIPID-PROTEIN INTERACTIONS AS DERIVED FROM SEVERAL SPECTROSCOPIC TECHNIQUES. *Michael R. Paddy and F. W. Dahlquist*

112 ACTIVITY OF PHOSPHOLIPID EXCHANGE PROTEINS TOWARD GEL AND LIQUID-CRYSTALLINE PHOSPHOLIPID VESICLES. *George M. Helmkamp, Jr.*

FUSION AND BIOGENESIS

117 LIPID AND PROTEIN INTERACTIONS IN Ca^{++}-PROMOTED AGGREGATION AND FUSION OF CHROMAFFIN GRANULE MEMBRANES. *Stephen J. Morris, Thomas C. Südhof, and Duncan H. Haynes*

119 A CELL-FREE MODEL FOR PROTEIN-LIPID INTERACTIONS IN EXOCYTOSIS. AGGREGATION AND FUSION OF CHROMAFFIN GRANULES IN THE PRESENCE OF CALCIUM, SYNEXIN, AND *cis*-UNSATURATED FATTY ACIDS. *Carl E. Creutz and Harvey B. Pollard*

121 MEMBRANE FUSION AND THE MECHANISM OF TERMINAL GLYCOSYLATION WITHIN THE GOLGI APARATUS OF RAT LIVER HEPATOCYTES. *J. J. M. Bergeron, J. Paiement, R. Rachubinski, N. M. K. Ng Ying Kin, and R. Sikstrom*

122 VOLTAGE-DEPENDENT CHANGES OF A MEMBRANE PROTEIN IN LIPID MODEL MEMBRANES. STUDIES WITH THE HEPATIC ASIALOGLYCOPROTEIN RECEPTOR. *Robert Blumenthal, Richard D. Klausner, and John N. Weinstein*

124 QUANTITATIVE APPLICATION OF THE HELICAL HAIRPIN HYPOTHESIS TO MEMBRANE PROTEINS. *Thomas A. Steitz, Adrian Goldman, and Donald M. Engelman*

126 FATTY ACID ACYLATION OF MEMBRANE PROTEINS. *Milton J. Schlesinger and Anthony I. Magee*

127 MEMBRANE BIOGENESIS. A SOLUBLE PRECURSOR OF A MUTANT *LAC* PERMEASE IN *ESCHERICHIA COLI*. *Victor A. Fried*

128 FUSION AND DISASSEMBLY OF SENDAI VIRUS MEMBRANES WITH LIPOSOMES. *Anne M. Haywood and Bradley P. Boyer*

130 HUMAN BLOOD PLATELET AGGREGATION-INHIBITORY TARGET SITES ASSUMED TO INVOLVE MEMBRANE PHOSPHOLIPIDS. *R. P. Quintana, A. Lasslo, and M. Dugdale*

133 ENVIRONMENTALLY INDUCED REVERSIBLE PROTEIN TRANSLOCATION ACROSS INNER MITOCHONDRIAL MEMBRANE. *A. Waksman*

135 FORMATION OF THE ENVELOPE OF ROUS SARCOMA VIRUS AND VESICULAR STOMATITIS VIRUS FROM LOCALIZED LIPID REGIONS IN THE PLASMA MEMBRANE. *Geneva M. Omann, Joseph Cimino, Jeffrey E. Pessin, and Michael Glaser*

137 PARTIAL PURIFICATION OF ACTIVE ZONES OF PRESYNAPTIC PLASMA MEMBRANE BY IMMUNOADSORPTION. *George P. Miljanich, Allan R. Brasier, and Regis B. Kelly*

THEORY AND INTERPRETATION

141 EFFECTS OF LIPID-MEDIATED INTERACTIONS ON PROTEIN PAIR DISTRIBUTION FUNCTIONS. *Tim Pearson and Sunney I. Chan*

143 THEORY OF PROTEIN INFLUENCE ON MEMBRANE THICKNESS. *Jay Edelman*

145 INTERFACIAL FREE ENERGIES AND THE CONTROL OF THE POSITIONING AND AGGREGATION OF MEMBRANE PROTEIN. *Donald F. Gerson*

147 A MODEL FOR TRANSITION STATE DYNAMICS IN BILAYERS. IMPLICATIONS FOR THE ROLE OF LIPIDS IN BIOMEMBRANE TRANSPORT. *Thomas H. Haines*

148 RESOLUTION OF HETEROGENEOUS FLUORESCENCE BY PHASE-SENSITIVE FLUORESCENCE SPECTROSCOPY. *Joseph R. Lakowicz and Henryk Cherek*

151 REINTERPRETATION OF THE ESR SPECTRA OF MEMBRANE PROTEIN SPIN LABELS. *Joseph M. Rifkind, Joy G. Mohanty, Jin Tsai Wang, and George S. Roth*

152 ADVANTAGES AND LIMITATIONS OF SPIN LABELING IN QUANTITATING PROTEIN-LIPID ASSOCIATIONS. *O. Hayes Griffith, J. Craig Baumeister, and Patricia C. Jost*

154 MOLECULAR MECHANISMS OF ALAMETHICIN CHANNEL GATING. *Steven C. Quay and Ramon Latorre*

LIPID-PEPTIDE INTERACTIONS

159 NATURE OF MELITTIN-PHOSPHOLIPID INTERACTION. *S. Georghiou, M. Thompson, and A. K. Mukhopadhyay*

161 THE INTERACTION WITH PHOSPHOLIPIDS OF BEE VENOM MELITTIN. A STRUCTURAL STUDY OF THE PEPTIDE AND LIPID COMPONENTS. *Franca Podo, Roberto Strom, Carlo Crifò, Carmen Berthet, Martin Zulauf, and Guiseppe Zacchai*

163 STUDIES ON THE INTERACTION OF GLUCAGON WITH PHOSPHOLIPIDS. *R. M. Epand and J. M. Sturtevant*

165 FLUORESCENCE QUENCHING IN MODEL MEMBRANES. *G. W. Feigenson*

166 PHOSPHOLIPASE A_2 ACTION ON MEMBRANE SURFACES. EFFECT OF IONIC STRENGTH, TRITON X-100, AND MELITTIN. *Marina Adamich and Edward A. Dennis*

168 SPECIFICITY IN PROTEIN-MEMBRANE ASSOCIATIONS. THE INTERACTION OF GANGLIOSIDES WITH *ESCHERICHIA COLI* HEAT-LABILE ENTEROTOXIN AND CHOLERAGEN. *J. C. Osborne, Jr., J. Moss, P. H. Fishman, S. Nakaya, and D. C. Robertson*

170 THE INTERACTION BETWEEN A SYNTHETIC AMPHIPHILIC POLYPEPTIDE AND LIPIDS. *James H. Davis, Robert S. Hodges, and Myer Bloom*

172 DYNAMICS OF APOLIPOPROTEIN-PHOSPHOLIPID INTERACTIONS. *Christie G. Brouillette, Jere P. Segrest, Thian Ng, Byung Hong Chung, and James B. Ragland*

174 LIPOPROTEIN LIPASE INTERACTION WITH SYNTHETIC *N*-DANSYL FRAGMENTS OF APOLIPOPROTEIN C-II. *Louis C. Smith, John C. Voyta, Paavo K. J. Kinnunen, Antonio M. Gotto, Jr., and James T. Sparrow*

175 THERMODYNAMICS OF LIPID-PROTEIN ASSOCIATION IN HUMAN PLASMA LIPOPROTEINS. *Henry J. Pownall, Quien Pao, Diane Hickson, James T. Sparrow, and Antonio M. Gotto, Jr.*

177 MECHANISM OF ASSOCIATION OF HUMAN PLASMA APOLIPOPROTEINS WITH DIMYRISTOYLPHOSPHATIDYLCHOLINE. EFFECT OF LIPID CLUSTERS ON REACTION RATES. *Henry J. Pownall and John B. Massey*

179 APOLIPOPROTEIN A-II AND SERUM HIGH-DENSITY LIPOPROTEINS. A MODEL SYSTEM FOR THE STUDY OF PROTEIN-LIPID INTERACTIONS AT A NATURAL HYDROPHILIC-HYDROPHOBIC INTERFACE. *Angelo M. Scanu, Peter Lagocki, Celina Edelstein, and Robert Byrne*

STRUCTURAL STUDIES

185 THE 1.3-Å STRUCTURE OF A SCORPION NEUROTOXIN. A MEMBRANE-BINDING PROTEIN. *F. L. Suddath, Charles E. Bugg, Steven A. Ealick, Robert J. Almassy, and Juan C. Fontecilla-Camps*

187 AN IMPLICATION OF THE STRUCTURE OF BACTERIORHODOPSIN. GLOBULAR MEMBRANE PROTEINS ARE STABILIZED BY POLAR INTERACTIONS. *D. M. Engelman*

189 GAP JUNCTIONS STRUCTURES III. THE EFFECT OF VARIATIONS IN THE ISOLATION PROCEDURE. *Lee Makowski, D. L. D. Caspar, D. A. Goodenough, and W. C. Phillips*

191 ON THE STRUCTURAL ROLE OF THE ϵ-(γ-GLUTAMYL)LYSINE CROSS-LINK IN THE CELL MEMBRANE. *R. B. Haugland, T-I. Lin, R. M. Dowben, and P. J. Birckbichler*

193 CHARACTERIZATION OF THE AMPHIPATHIC STRUCTURE OF γ-GLUTAMYLTRANSPEPTIDASE F13. *Thomas Frielle and Norman P. Curthoys*

195 STRUCTURE OF THE H^+-ATPASE ($F_1 \cdot F_0$) FROM *ESCHERICHIA COLI* AND ITS DICYCLOHEXYLCARBODIIMIDE-PROTEIN IN SOLUTION BY X-RAY SCATTERING METHODS. *Hasko H. Paradies, Gabriele Mertens, Roland Schmid, Erwin Schneider, and Karlheintz Altendorf*

197 THE EFFECTS OF LIPID ENVIRONMENT, ION-BINDING, AND CHEMICAL MODIFICATIONS ON THE STRUCTURE OF THE GRAMICIDIN TRANSMEMBRANE CHANNEL. *B. A. Wallace, W. R. Veatch, and E. R. Blout*

199 ONE KIND OF INTRAMEMBRANE PARTICLE IS WATER SOLUBLE. *J. David Robertson and Juan Vergara*

201 LIPID-DEPENDENT STRUCTURAL CHANGES OF AN AMPHOMORPHIC MEMBRANE PROTEIN. *A. Keith Dunker, Stephen P. A. Fodor, and Robert W. Williams*

Plenary Discussion Papers

NATIVE MEMBRANES: SARCOPLASMIC RETICULUM

207 PROTON NMR T_1, T_2, AND $T_{1\rho}$ RELAXATION STUDIES OF NATIVE AND RECONSTITUTED SARCOPLASMIC RETICULUM AND PHOSPHOLIPID VESICLES. *Alan J. Deese, Edward A. Dratz, Lin Hymel, and Sidney Fleischer*
DISCUSSION

217 ROTATIONAL DYNAMICS OF PROTEIN AND BOUNDARY LIPID IN SARCOPLASMIC RETICULUM MEMBRANES. *David D. Thomas, Diana J. Bigelow, Thomas C. Squier, and Cecilia Hidalgo*
DISCUSSION

227 ^{31}P NUCLEAR MAGNETIC RESONANCE STUDIES OF THE PHOSPHOLIPID-PROTEIN INTERFACE IN CELL MEMBRANES. *Philip L. Yeagle*
DISCUSSION

NATIVE MEMBRANES: F13 COAT PROTEIN

243 ^{19}F NUCLEAR MAGNETIC RESONANCE STUDIES OF THE COAT PROTEIN OF BACTERIOPHAGE M13 IN SYNTHETIC PHOSPHOLIPID VESICLES AND DEOXYCHOLATE MICELLES. *Heather D. Dettman, Joel H. Weiner, and Brian D. Sykes*
DISCUSSION

253 BILAYER ACYL CHAIN DYNAMICS AND LIPID-PROTEIN INTERACTION. THE EFFECT OF THE M13 BACTERIOPHAGE COAT PROTEIN ON THE DECAY OF THE FLUORESCENCE ANISOTROPY OF PARINARIC ACID. *Paul K. Wolber and Bruce S. Hudson*
DISCUSSION

MODEL SYSTEMS

265 ESR SPIN-LABEL STUDIES OF LIPID-PROTEIN INTERACTIONS IN MEMBRANES. *D. Marsh, A. Watts, R. D. Pates, R. Uhl, P. F. Knowles, and M. Esmann*
DISCUSSION

275 CONFORMATIONS OF MODEL PEPTIDES IN MEMBRANE-MIMETIC ENVIRONMENTS. *Lila M. Gierasch, Jeffrey E. Lacy, Karyn F. Thompson, Arlene L. Rockwell, and Paula I. Watnik*
DISCUSSION

285 THE ACTIVE FORM OF CYTOCHROME *c* OXIDASE. EFFECTS OF DETERGENT, THE INTACT MEMBRANE, AND RADIATION INACTIVATION. *D. A. Thompson, M. Suárez-Villafañe, and S. Ferguson-Miller*
DISCUSSION

FUSION AND BIOGENESIS

297 MODULATION OF MEMBRANE FUSION BY CALCIUM-BINDING PROTEINS. *Keelung Hong, Nejat Düzgüneş, and Demetrios Papahadjopoulos*
DISCUSSION

307 BIOGENESIS OF MEMBRANE LIPOPROTEINS IN *ESCHERICHIA COLI*. *Henry C. Wu, Jiunu-Shyong Lai, Shigeru Hayashi, and Chou-Zen Giam*
DISCUSSION

MELITTIN

319 High Resolution Nuclear Magnetic Resonance Studies of the Conformation and Orientation of Melittin Bound to a Lipid-Water Interface. *Larry R. Brown, Werner Braun, Anil Kumar, and Kurt Wüthrich*
DISCUSSION

329 Kinetics and Mechanism of Hemolysis Induced by Melittin and by a Synthetic Melittin Analogue. *W. F. DeGrado, G. F. Musso, M. Lieber, E. T. Kaiser, and F. J. Kézdy*
DISCUSSION

339 Comparative Effects of Melittin and its Hydrophobic and Hydrophilic Fragments on Bilayer Organization by Raman Spectroscopy. *Ira W. Levin, Françoise Lavialle, and Christa Mollay*
DISCUSSION

STRUCTURAL STUDIES

353 The Structure of Melittin in the Form I Crystals and its Implications for Mellitin's Lytic and Surface Activities. *Thomas C. Terwillinger, Larry Weissman, and David Eisenberg*
DISCUSSION

363 Formation of Crystalline Arrays of Chlorophyll *a*/*b*-Light-Harvesting Protein by Membrane Reconstitution. *Jade Li and Carol Hollingshead*
DISCUSSION

371 Structure and Function of an Acetylcholine Receptor. *Joerg Kistler, Robert M. Stroud, Michael W. Klymkowsky, Roger A. Lalancette, and Robert H. Fairclough*
DISCUSSION

381 LIST OF PARTICIPANTS

393 INDEX OF AUTHORS

399 SUBJECT INDEX

February 1982 *volume* 37 *number* 2

405 Photoacoustic Photocalorimetry and Spectroscopy of *Halobacterium halobium* Purple Membranes. *Haim Garty, S. R. Caplan, and David Cahen*

417 Biochemical Profiles of Membranes from X-ray and Neutron Diffraction. *Leon McCaughan and S. Krimm*

427 Anomalous Potassium Channel-Gating Rates as Functions of Calcium and Potassium Ion Concentrations. *Jurgen F. Fohlmeister and William J. Adelman, Jr.*

433 The Aggregation Characteristics of Column-purified Rabbit Skeletal Myosin in the Presence and Absence of C-Protein at pH 7.0. *J. F. Koretz, L. M. Coluccio, and A. M. Bertasso*

441 Solvent Substitution as a Probe of Channel Gating in *Myxicola*. Effects of D_2O on Kinetic Properties of Drugs that Occlude Channels. *C. L. Schauf and J. O. Bullock*

453 Simple Model of Smooth Muscle Myosin Phosphorylation and Dephosphorylation as Rate-Limiting Mechanism. *John W. Peterson, III*

461 On the Wobbling-in-Cone Analysis of Fluorescence Anisotropy Decay. *Kazuhiko Kinosita, Jr., Akira Ikegami, and Suguru Kawato*

465 Photoelectric Currents across Planar Bilayer Membranes Containing Bacterial Reaction Centers. Response under Conditions of Single Electron Turnover. *Nigel K. Packham, P. Leslie Dutton, and Paul Mueller*

475 Muscle Diffraction Theory. Relationship between Diffraction Subpeaks and Discrete Sarcomere Length Distributions. *M. M. Judy, V. Summerour, T. LeConey, R. L. Roa, and G. H. Templeton*

489 Discrete Sarcomere Length Distribution in Skeletal Muscle. *T. Tameyasu, N. Ishide, and G. H. Pollack*

493 Kinetics of Rouleau Formation. I. A Mass-Action Approach with Geometric Features. *Richard W. Samsel and Alan S. Perelson*

515 II. The Equilibrium Size Distribution of Rouleaux. *Alan S. Perelson and Frederik W. Wiegel*

523 The Electronic Structure of Fe^{2+} in Reaction Centers from *Rhodopseudomonas sphaeroides*. II. Extended X-ray Fine Structure Studies. *P. Eisenberger, M. Y. Okamura, and G. Feher*

539 An X-ray Absorption Study of the Iron Site in Bacterial Photosynthetic Reaction Centers. *Grant Bunker, Edward A. Stern, Robert E. Blankenship, and William W. Parson*

Brief Communications

553 A Comparison of Resolution-enhancement Methods in Saturation-Transfer EPR. ^{15}N Isotopically Substituted Spin Labels and 35 GHz High-Frequency Operation. *Michael E. Johnson, P. Thiyagarajan, Barbara Bates, and Bruce L. Currie*

559 ^{1}H-NMR Relaxation Investigation of Water Bound to Bovine Rod Outer Segment Disk Membranes. *Elena Gaggelli, Neri Niccolai, and Gianni Valensin*

563 Artificial Black Membranes from Bipolar Lipids of Thermophilic Archaebacteria. *Alessandra Gliozzi, Ranieri Rolandi, Mario De Rosa, and Agata Gambacorta*

March 1982 *volume* 37 *number* 3

569 Diffusion of Lysozyme Chloride in Water and Aqueous Potassium Chloride Solutions. *A. David Cadman, Robert Fleming, and Richard H. Guy*

575 Comparison of Nernst-Plank and Reaction-Rate Models for Multiply Occupied Channels. *David G. Levitt*

589 Linking Regions between Helices in Bacteriorhodopsin Revealed. *David A. Agard and Robert M. Stroud*

603 Orientational Changes of the Absorbing Dipole of Retinal upon the Conversion of Rhodopsin to Bathorhodopsin, Lumirhodopsin, and Isorhodopsin. *M. Michel-Villaz, C. Roche, and M. Chabre*

617 Quantitative Characterization of the Lateral Distribution of Membrane Proteins within the Lipid Bilayer. *Ernesto Freire and Brian Snyder*

625 The Kinetics of Local Anesthetic Blockade of End-Plate Channels. *Robert L. Ruff*

633 Lipid-Protein Interactions in Sarcoplasmic Reticulum Are not Perturbed by Ionophore A23187. An EPR and Fluorescence Study. *Michael J. Pringle and Cecilia Hidalgo*

637 Liquid Diffraction Analysis of Sarcoplasmic Reticulum. II. Solvent Electron Contrast Variation. *G. W. Brady, D. B. Fein, M. E. Harder, and G. Meissner*

647 Identification of the Scattering Elements Responsible for Lens Opacification in Cold Cataracts. *M. Delaye, J. I. Clark, and G. B. Benedek*

657 Interactions between Neutral Phospholipid Bilayer Membranes. *L. J. Lis, M. McAlister, N. Fuller, R. P. Rand, and V. A. Parsegian*

667 Measurement of the Lateral Compressibility of Several Phospholipid Bilayers. *L. J. Lis, M. McAlister, N. Fuller, R. P. Rand, and V. A. Parsegian*

Brief Communications

673 Extraction of Membrane Microviscosity from Translational and Rotational Diffusion Coefficients. *B. D. Hughes, B. A. Pailthorpe, L. R. White, and W. H. Sawyer*

677 Delayed Kinetics of Squid Axon Potassium Channels Do not Always Superpose after Time Translation. *John R. Clay and Michael F. Shlesinger*

681 Corrections